**Definitions**

bacterium - a single celled microscopic organism, whose genetic material is not enclosed by a membrane ( E. coli, Strep throat)

epidemic - a widespread outbreak of an infectious disease where many people are infected at the same time.

epidemiology - the branch of medical science dealing with the incidence, distribution and control of disease in a population.

exposure - the act of coming into contact with a disease-causing microorganism; exposure may or may not lead to infection.

microbe - a microscopic organism, such as a bacterium, a virus or a protozoan. Although most microbes that live in our environment perform functions essential to our survival, a small percentage of them enter our bodies to cause an infectious disease. Infectious diseases emerge, suddenly or gradually, in various environments, and may spread across a region or even the world.

outbreak - the occurrence of a large number of cases of a disease in a short period of time.

pandemic - an epidemic that affects multiple geographic areas at the same time.

pathogen - any disease-producing agent; i.e. virus, bacteria or other microorganisms.

vaccine - a substance that contains antigenic components , either weakened, dead or synthetic, from an infectious organism which is used to produce active immunity against that organism.

virus - ultramicroscopic infectious agent that replicates itself only within cells of living hosts. (common cold, flu)

immune system – an organism that protects against disease. An **immune system** must detect a wide variety of pathogens, from viruses to parasitic worms,

transmitted – the action of a pathogen being given from one person to another

germs – a microorganism that can cause disease

### Explain how to avoid catching the Zombie Virus:

### Consider taking a multivitamin

* Wash your hands with soap and water often
* Use hand sanitizer only if soap and water are not available.
* Avoid touching your face, especially your eyes, nose and mouth.
* Eat a diet rich in colorful foods to ensure you’re getting antioxidants.
* Get a good night’s rest. Sleep is important to maintaining a healthy immune system.

**Explain how a virus spreads so rapidly:**

* can be spread from person to person as far as 6 feet away
* being in close contact with people can cause a virus to spread more easily
* people who don’t use proper hygiene can spread the virus
* people who cough and sneeze without covering their mouths can spread the virus
* a virus can begin with one person in a community and very quickly spread to many people because of the above listed things

**Explain how the virus invades cells:**

* most viruses enter the body through the eyes, nose and throat
* some viruses can enter the body through an open cut or through other openings on the body
* the virus invades a cell and is taken down to the nucleus.
* once it reaches the nucleus it injects DNA that tells the cell to make copies of the virus
* the virus copies burst from the cell and they go and invade other cells

**How can viruses move from person to person?:**

* a virus is spread when you either inhale infected droplets in the air
* can be spread from person to person by coughs or sneezes or when you come in direct contact with an infected person's secretions (by kissing, touching, sharing objects such as spoons and forks, biting, etc.).

**Explain vaccines for viruses:**

* Vaccines work to prime your immune system against future “attacks” by a particular disease. There are vaccines against both viral and bacterial pathogens, or disease-causing agents.
* When a pathogen enters your body, your immune system generates antibodies to try to fight it off. Depending on the strength of your immune response and how effectively the antibodies fight off the pathogen, you may or may not get sick.
* If you do fall ill, however, some of the antibodies that are created will remain in your body playing watchdog after you’re no longer sick. If you’re exposed to the same pathogen in the future, the antibodies will ”recognize” it and fight it off.
* Vaccines work because of this function of the immune system. They’re made from a killed, weakened, or partial version of a pathogen. When you get a vaccine, whatever version of the pathogen it contains isn’t strong or plentiful enough to make you sick, but it’s enough for your immune system to generate antibodies against it. As a result, you gain future immunity against the disease without having gotten sick: if you’re exposed to the pathogen again, your immune system will recognize it and be able to fight it off.
* Vaccines that are made with killed versions of pathogens—or with only a part of the pathogen—are not able to cause illness. When a person receives these vaccines, it is impossible for him or her to become ill with the disease.

**Explain why antibiotics will not work to cure a virus:**

* Antibiotics are medicines used to treat infections or diseases caused by [bacteria](http://www.nps.org.au/glossary/bacteria).
* Antibiotics do not work against [viruses](http://www.nps.org.au/glossary/virus). Many common respiratory tract infections (RTIs) — such as colds and flu — are caused by viruses, so antibiotics are of no use.
* A course of antibiotics **won’t** help you to get over a [cold](http://www.nps.org.au/conditions/respiratory-problems/respiratory-tract-infections/for-individuals/conditions/common-cold) or flu (influenza) faster, **won’t** stop your infection from getting worse, and **won’t** prevent your infection being passed onto other people.
* Antibiotics are used to treat bacterial infections.

**Explain the differences between a virus and bacteria:**

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| **Bacteria** |
| * single celled organisms that attack other cells. |
| * They cannot penetrate the cell membrane and remain in the blood stream. |
| * can multiply and survive without invading a host |
| Good and Bad Bacteria–   * Good: live in your stomach and help digest food. * Bad: cause infections like strep, sinus infections, gangrene and ear infections |
| * Can be treated with antibiotics, which kill the bacteria and stop it from continuing to multiply |
| * Can multiply at an incredibly fast rate |

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| **Viruses** |
| * many times smaller than bacteria |
| * small bundles of DNA which need a host cell in order to duplicate |
| * many different types of viruses exist…ALL are bad |
| * can’t be treated with antibiotics |
| * can’t be cured, can only be treated with immune boosting medicines or medicines to treat the symptoms |